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Response Dated July 30, 2007
Reply to Office Action of January 31, 2007

independent claim 1 distinguishes patentably from the prior art and is allowable, then each of its trailing dependent claims must so distinguish and be allowable. *In re Fine*, 837 F.2d 1371, 1376, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). Consequently, the following remarks and the Declaration submitted herewith will focus on the reasons why the cited references do not teach or suggest the combination of features set forth in claim 1.

The Examiner rejected claims 1 under 35 U.S.C. §103(a) as being unpatentable over *Buck* in view of *Prevost*. To establish “obviousness”: (1) the prior art itself must suggest or motivate the modification of the reference, (2) there must be a reasonable expectation of success, and (3) the prior art must teach or suggest all the claim limitations. In addition, certain “secondary considerations” described by the court in *Graham v. John Deer Co.*, 383 U.S. 1, 148 USPQ 459 (1966), may provide evidence regarding the question of obviousness. *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1555 (Fed. Cir. 1983). Among these secondary factors are teaching away, unexpected results, and commercial success, each of which indicate in this case that the claimed invention would not have been obvious.

The Cited References.

Buck discloses an artificial turf system having an infill layer. However, as the Examiner admits, “*Buck* is silent as to the spacing between the fibers.” To fill this gap, the Examiner relies on *Prevost*. *Prevost* discloses an artificial turf line system for a natural grass playing field. *Prevost* indicates that an “object of a first embodiment of the present invention is to provide a permanent marking system for natural grass turf surfaces in order to reduce the cost and labor involved in maintenance of the lines.” (Column 1, line 66 - column 2, line 2). *Prevost* goes on to indicate that an “object of the second embodiment is to eliminate the need to trim natural grass strips disposed between adjacent patio stones.” (Column 2, lines 15-17).

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Even Combined the Cited References Do Not Teach All the Limitations of Claim 1.

While *Prevost* generally discloses the conventional tufting spacing between rows of 5/16" to 2 1/4", and generally discloses the conventional tufting spacing between columns of 1/8" to 1/2", there is no teaching or suggestion that the spacing between the rows and columns be at any particular proportion or ratio, such as substantially equal or 1:1. Nor is there any teaching or suggestion of any benefit to having any particular proportion or ratio, let alone a benefit to having the claimed proportion or ratio. Thus, there is simply no teaching, suggestion or motivation found in *Buck*, even in combination with *Prevost*, for Applicant's claimed relationship.

Applicant is Not Optimizing a Range Disclosed in the Cited References

The Examiner admits that *Prevost* does not teach the same proportions as claimed, but states:

One of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by *Prevost* overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages, In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05. It is further noted that the applicant has not given reasoning or evidence for how substantially the same spacing of columns and rows has advantages over other values. It has been known in the art to

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create uniform playing characteristics with good quality playing surfaces (column 5 line 45-65 Prevost). It would further be obvious to optimize these properties within the disclosed ranges of Prevost. [Office Action p. 6-7]

It is respectfully submitted that the present case does not fall within the providence of *In re Peterson* and its progeny because none of the cited references disclose the general variable, parameter or condition referred to in claim 1. Claim 1 requires that the spacing between the columns and rows of fibers to be substantially the same. Thus, the variable, parameter or condition to which this limitation is directed is the ratio or relative proportion of fiber spacing. However, the cited references simply do not teach, suggest or mention a ratio or relative proportion of spacing between rows and columns. Thus, the references do not teach Applicant's claimed variable or parameter at any level, value or range. Accordingly, Applicant is not optimizing any particular ratio or relative proportion of fiber spacing range taught by the prior art.

Nor do the cited references teach or suggest that the ratio or relative proportion of fiber spacing is an important characteristic for playability or otherwise. Furthermore, none of the identified prior art, either individually or in combination, teach or suggest how such characteristic could be optimized, or that it is critical. Since the cited prior art does not even teach the general parameter or variable of claim 1, a *prima facie* case of obviousness has not been established.

The lack of a *prima facie* case of obviousness in this case is supported by a number of Federal Circuit decisions. The Federal Circuit in *In re Rijckaert*, 28 USPQ 2d 1955, 1957 (Fed. Cir. 1993), held that the PTO had failed to establish a *prima facie* case of obvious under 35 U.S.C. §103 because "the prior art relied upon does not disclose, suggest, or render obvious the

claimed invention, either individually or when combined." The claim at issue *In re Rijckaert* was drawn to a recording apparatus and specified a relationship between time expansion or compression and three variables. *Id.* at 1955. The Federal Circuit held that the PTO made an error in its obviousness rejection because the primary reference: (1) neither disclosed the wrapping angle variable nor the recording occurrence variable; (2) did not discuss the claimed relationship of the three variables to time expansion/compression; (3) did not describe the use of time expansion and compression as a means of optimally filling tracks; or (4) did not suggest that the three variables of the claims were even a factor in determining the amount of time expansion or time compression." *Id.* at 1956-1957. In responding to the Commissioner's argument that in the recording art the exact match of signal time to recording time was an optimal condition and that this condition would have been met by fulfilling the claimed relationship, the Federal Circuit stated:

While the condition described may be an optimal one, it is not "inherent" in Awamoto. Nor are the means to achieve this optimal condition disclosed by Awamoto, explicitly or implicitly. The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency. That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown. Such a retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection.

Id. at 1957 (citations and quotations omitted). Thus, because the references did not discuss all of the variables found in the claims, let alone the manner of optimizing those variables, a *prima facie* case of obviousness had not been established.

In the present case, there is no teaching or suggestion in the cited prior art of a ratio or relative proportion of fiber spacing, nor does the prior art discuss any means of optimizing this ratio or relative proportion of fiber spacing.

In *In re Antonie*, 195 USPQ 6, 9 (CCPA 1977), the Federal Circuit held that when a parameter is not recognized as being a result-effective variable, a *prima facie* case of obviousness is not met. In *In re Antonie*, the applicant had claimed a waste water treatment device with a ratio of tank volume to contactor area of 0.12 gallons per ft³. The Examiner had rejected the claim under 35 U.S.C. §103 based on the El-Naggar reference. In particular, the Examiner had rejected the claims noting that the basic device in question was old as taught by El-Naggar. While the ratio tank volume to contactor area was not disclosed in El-Naggar, the Examiner reasoned that the disclosure of El-Naggar would make a device with that optimal value obvious. *Id.* at 7. Thus, the Examiner argued that the idea of increasing tank volume to surface area to increase efficiency was taught and that working out the value for optimal efficiency was mere mechanical experimentation. *Id.* at 7. The Federal Circuit disagreed. The Federal Circuit stated:

The controlling question is simply whether the differences (namely the value of 0.12 in its property) between the prior art and appellant's invention as a whole are such that appellant's invention as a whole would have been obvious. The answer is no. It is impossible to recognize, from the experiment taught by El-Naggar, that "treatment capacity" is a function of "tank volume" or the tank volume-to-contactor area ratio. Recognition of this functionality is essential to the obviousness of conducting experiments to determine the value of the "tank volume" ratio which will maximize treatment capacity.

* * *

This sort of experiment would not be suggested by the teachings of El-Naggar since he was not trying to maximize or control "treatment capacity." The experiments suggested by El-Naggar do not reveal the property which applicant has discovered, and the PTO has provided us with no other basis for the obviousness of the necessary experiments.

The PTO and the minority appear to argue that it would always be *obvious* for one of ordinary skill in the art to try varying every parameter of a system in order to optimize the effectiveness of the system even if there is no evidence in the record that the prior art

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recognized that particular parameter affected the result. As we have said many times, *obvious to try* is not the standard of 35 U.S.C. §103.

Id. at 8. Thus, the Federal Circuit clearly set forth that, unless the reference teaches the importance of a given parameter and how the optimization experimentation should be conducted, the reference does not render the claimed invention obvious.

In this case, the cited prior art does not disclose the parameter or variable used in claim 1, namely ratio or relative proportion of fiber spacing. Nor does it disclose or identify this ratio or relative proportion of fiber spacing as being related to the playability of the turf, nor does it disclose or identify this ratio or relative proportion of fiber spacing as being a characteristic, variable or parameter of the type that should be optimized, nor does it disclose the type of experimentation needed to optimize this characteristic, variable or parameter.

Accordingly, Applicant respectfully submits that a *prima facie* case of obviousness has not been established.

The Prior Art Teaches Away From the Claimed Invention

As a general rule, a reference that “teaches away” cannot create a *prima facie* case of obviousness. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

In the Office Action the Examiner suggests that *Prevost* “would make it obvious to one of ordinary skill in the art to use equal spacing between the columns and rows since it is known to be advantageous to use wider parallel spacing of rows in order to make easier installation of granular material.” However, this passage in *Prevost* actually teaches away from the claimed invention. For easier installation of granular material, *Prevost* instructs us to use the widest spacing of 2 1/4" inches between the rows. However, 1/2" inch is the widest disclosure provided with respect to the spacing between the columns, a difference of over an inch from the spacing

between the rows that *Prevost* suggest should be set at a maximum. Thus, following the teaching and suggestion of *Prevost* would result in spacing between rows substantially greater than spacing between columns. Thus, *Prevost* teaches away from a turf system in which the spacing between the rows and the spacing between the columns are substantially the same.

Unexpected Results

Even if a *prima facie* case of obviousness is made, an unexpected benefit or result can render the claim non-obvious. See *KSR Int'l Co. v. Teleflex Inc.*, 127 F.Ct. 1727, 1740 (2007); *KAO Corp. v. Unilever USU. Sp., Inc.*, 441 F.3d 963, 969-70 (Fed. Cir. 2006) (unexpected results sufficient to rebut prior *prima facie* case of obviousness). Thus, an applicant may overcome a *prima facie* case of obviousness by establishing that the claimed range achieves unexpected results relative to the prior art range. *In re Peterson*, 65 USPQ 2d 1379, 1385 (Fed. Cir. 2003). The same standard applies when an applicant seeks to “optimize certain variables by selecting narrow ranges from broader ranges disclosed in the prior art.” *Id.*

As Applicant's specification explains, “having rows 49 and columns 48 equally spaced apart allows for a more consistent playing surface laterally and longitudinally.” (Specification, p. 4, lines 22-23). In addition, the specification provides results from several tests measuring traction (the ability of the surface to provide frictional support at the interface between a sports shoe and the surface) and translational and rotational friction (markers used to determine the optimum level of friction between the turf surface and a player's athletic shoe). As those test results indicate, the preferred embodiment of the claimed turf was “highly recommended for both cushioning and friction properties, the highest available ranking.” (Specification, p. 11, lines 19-20). Thus, Applicant's turf has a playing surface with unexpectedly enhanced traction and

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playability. Applicant's equidistant spacing of fiber rows and columns provided unexpected and desirable results.

This is further attested to in the Declaration of Dr. Phil Stricklen enclosed herewith (the "Declaration"). As indicated in that Declaration, there was no appreciation in the prior art that greater playability could be provided by turf with the claimed spacing between the rows and columns of fibers. The conventional wisdom had always been that the spacing between the rows should be greater than the spacing between the columns. (Declaration ¶ 8) Applicant's invention went against that conventional wisdom to achieve unexpected results. (Declaration ¶¶ 9, 10) An insight that is contrary to the understanding and expectations of conventional wisdom is a factor in favor of overcoming non-obviousness and is strong evidence of non-obviousness. *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986).

Commercial Success

The novel relationship of the equally spaced rows and columns and the resultant unexpected improvements of the playing surface have allowed the claimed invention to achieve great commercial success. This commercial success is due to the fact that the claimed turf has fulfilled an unmet need in the marketplace – that is, an artificial turf surface that provides the desired playability of a natural grass field. Commercial success is probative of whether an invention was non-obvious. “When a patentee demonstrates commercial success, usually shown by significant sales in a relevant market, and that the successful product is the invention disclosed in claim of a patent, it is presumed that the commercial success is due to the patented invention. The burden then shifts to the challenger to prove that the commercial success is instead due to other factors extraneous to the patented invention, such as advertising or superior workmanship. The patentee is not required to prove as part of its *prima facie* case that the

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commercial success of the patented invention is due to factors other than the patented invention.”

Winner Int'l Loyalty Corp. v. Wang, 202 F.3d 1340, 1351-52 (Fed. Cir. 2000).

A product that had equidistant space between the rows and columns of fibers was first introduced in 2003. (Declaration ¶ 12). Since that time, products having an equidistant spacing between the rows and columns of fibers have been installed in over 300 fields to capture a market share of about 18%. (Declaration ¶ 12). The commercial success of artificial turf incorporating the claimed technology, along with its fulfillment of a need in the marketplace, is a clear indication of non-obviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Conclusion

Accordingly, Applicant's attorneys respectfully submit that the claim 1 combination as it presently stands would not have been obvious to a person skilled in this art at the time the invention was made, and requests reconsideration of the rejection of claim 1, and its trailing dependent claims.

This Reply is believed to be fully responsive to the Office Action of January 31, 2007, is believed to squarely address each and every ground for objection or rejection raised by the Examiner, and is further believed to materially advance the prosecution of this application toward immediate allowance.

Formal allowance of claims 1-2, 4-5 and 7-12 is, therefore, courteously solicited.

Respectfully submitted,

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CERTIFICATE OF MAILING

I certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, this 30th day of July, 2007.

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